

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/22/2011 has been entered.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Kevin Ross Davis on 09/30/2011.

The application has been amended as follows:

IN THE CLAIMS

In claim 38, line 3, the phrase “using the exposure method” has been changed to:

--by operating the exposure method--.

In claim 52, line 4, the phrase “using the exposure apparatus” has been changed to:

--by operating the exposure apparatus--.

Claims 1, 2, 8-13 and 19-30 are cancelled.

Allowable Subject Matter

3. **Claims 5-7, 16-18 and 31-52** are allowed.
4. The following is an examiner’s statement of reasons for allowance:

With respect to claim 5, Schuster et al. discloses an exposure method, comprising:

illuminating a first object with an exposure beam (paragraph [0001] teaches where the invention relates to an optical arrangement, in particular to a microlithographic projection printing installation, thus indicating the use of a mask); and

exposing a second object with the exposure beam through the first object and a projection optical system (paragraph [0001] teaches where the invention relates to an optical arrangement, in particular to a microlithographic projection printing installation, thus indicating the use of a mask and substrate),

wherein a light beam having a wavelength range different (paragraph [0036]) teaches where the light beams 12 are greater than 4 μ m) from a wavelength range of the exposure beam (paragraph [0030] teaches where the exposure light is UV from a ArF excimer laser) enters one end of an optical guide (11),

by a polarization state control mechanism (15), a polarization state of the light beam (paragraph [0038]) is passed through the optical guide (11), and a part of at least one of the first object and the projection optical system is irradiated with the light beam in the predetermined polarized state to correct an imaging characteristic of the projection optical system (as shown in Fig. 1).

However, Schuster et al. does not teach by a polarization state control mechanism, a polarization state of the light beam which has passed through the optical guide is changed into a linearly-polarized state, and then changed into a predetermined polarized state, and it does not appear to be obvious why one of ordinary skill in the art would modify Schuster et al. to place a polarization state control mechanism so as to

change the light beam which has passed through the optical guide into a linearly-polarized state, and then changed into a predetermined polarized state.

Accordingly, the prior art fails to teach or fairly suggest an exposure method requiring “a polarization state control mechanism, a polarization state of the light beam which has passed through the optical guide is changed into a linearly-polarized state, and then changed into a predetermined polarized state,” in the combination required by the claim.

With respect to claim 16, Schuster et al. discloses an exposure apparatus which illuminates a first object on which a pattern for transfer is formed with an exposure beam (paragraph [0001] teaches where the invention relates to an optical arrangement, in particular to a microlithographic projection printing installation, thus indicating the use of a mask); and

exposes a second object with the exposure beam through the first object and a projection optical system (paragraph [0001] teaches where the invention relates to an optical arrangement, in particular to a microlithographic projection printing installation, thus indicating the use of a mask and substrate), comprising:

an irradiation mechanism (Fig. 1) which irradiates a part of at least one of the first object and the projection optical system with a light beam having a wavelength range different (paragraph [0036] teaches where the light beams 12 are greater than 4 μ m) from a wavelength range of the exposure beam (paragraph [0030] teaches where the exposure light is UV from a ArF excimer laser), wherein

the irradiation mechanism includes:
an optical guide (11) into which the light beam (16) enters;
a polarization state control mechanism (15), a polarization state of the light beam (paragraph [0038]) is passed through the optical guide (11), and
a space waveguide mechanism (10) which guides the optical beam in the predetermined polarized state into the part of at least one of the first object and the projection optical system. (as shown in Fig. 1).

However, Schuster et al. does not teach a polarization state control mechanism which changes a polarization state of the light beam which has passed through the optical guide into a linearly-polarized state, and then into a predetermined polarized state, and it does not appear to be obvious why one of ordinary skill in the art would modify Schuster et al. to place a polarization state control mechanism so as to change the light beam which has passed through the optical guide into a linearly-polarized state, and then changed into a predetermined polarized state.

Accordingly, the prior art fails to teach or fairly suggest an exposure method requiring “a polarization state control mechanism which changes a polarization state of the light beam which has passed through the optical guide into a linearly-polarized state, and then into a predetermined polarized state,” in the combination required by the claim.

Claims 6, 7, 17-18 and 31-52 are allowable by virtue of their dependency on claims 5 and 16.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Uehara [US 7,817,249 B2] discloses an exposure method and apparatus, and device producing method using two light beams to correct non-rotationally symmetric aberration.

Niibe et al. [US 5,390,228 A] discloses a method of and apparatus for stabilizing shapes of objects, such as optical elements, as well as exposure apparatus using same and method of manufacturing semiconductor devices.

Burghoorn [US 2003/0095241 A1] discloses an interferometric alignment system for use in vacuum-based lithographic apparatus.

Metivier [US 2008/0144164 A1] discloses a device for generating laser impulses amplified by optical fibres provided with photon layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEORAM PERSAUD whose telephone number is (571)270-5476. The examiner can normally be reached on M-F (7:30-5) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2882

/Edward J Glick/
Supervisory Patent Examiner, Art Unit 2882